



# Reaching 30 GW offshore wind for Ørsted by 2030

CBS Global Case Competition 2023

# Ørsted



Team  
**Renewables**



**CBS  
CASE  
COMPETITION**

# BLUEPRINT '30

## Two-fold strategy to secure market leader position

Targeting +8 GW of offshore wind capacities through a two-fold auction strategy approach



### Challenges

Changing climates are severely impacting the world's environment and biodiversity, while the offshore wind industry is affected by supply chain challenges, increasing competition and regulatory barriers.

**Team Renewables initiates a strategic plan to support Ørsted in realising 2030 ambitions**



### BLUEPRINT '30 Objective

Figure out how Ørsted can best reach our target of 30 GW offshore wind by 2030, while ensuring a healthy financial business and industry



### BLUEPRINT '30 Strategy

The Core Strategy approach is centered around established core offshore wind markets, and differentiated by offering battery system integration. The Growth Strategy approach is focused on East Asia, and differentiates the offering through local content



### BLUEPRINT '30 Impact

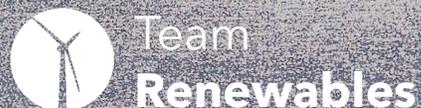
The implemented strategy complies with the outlined capital constraints of 200 DKKbn while accommodating Ørsted's stakeholder. Ørsted's offshore wind expansion through the core and growth strategies underpins the company's offshore wind market leader position by 2030

Targeted awarded  
capacity  
8 GW

Core  5GW, 12.9% win rate

Growth  3 GW, 20.1% win rate

Total capital  
committed  
DKK 170.9bn



# BLUEPRINT '30

## Agenda

### Executive summary p. 2



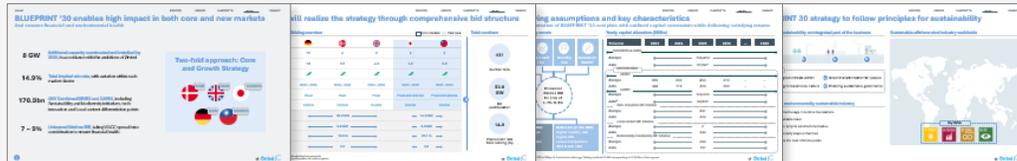
### Insights p. 4-7



### BLUEPRINT '30 p. 9-13



### Impact p. 15-18



### Conclusion p. 20



# The offshore industry has developed significantly and continues to grow

Ørsted is the global offshore wind market leader



Project Walney, U.K., Offshore Wind

#1

**Ørsted global offshore wind position**  
With comprehensive technological knowledge

7x

**Offshore market growth until 2030**  
Driven by rising political momentum

16%

**Potential floating share of offshore wind in 2050**  
Enabling build-out of renewables in areas previously inaccessible

70%

**Decrease in offshore LCOEs over the past decade**  
Making offshore wind competitive

# Ørsted is leading the offshore wind industry with ambition to grow

Ambition to grow portfolio installed capacity to 30 GW by 2030

## Ørsted to continue expansion with market leadership position



Global market leader within offshore wind



High Deliverability

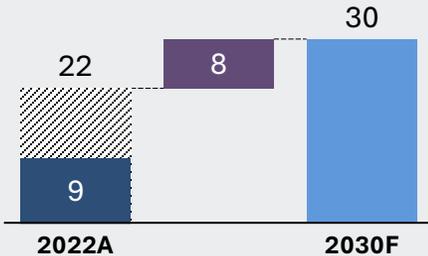


Budget precision



Extensive experience, +1,600 offshore turbines installed

# GW



Under construction / Awarded capacity  
 Current offshore capacity  
 Add. capacity to be secured and installed  
 Projected capacity according to ambition

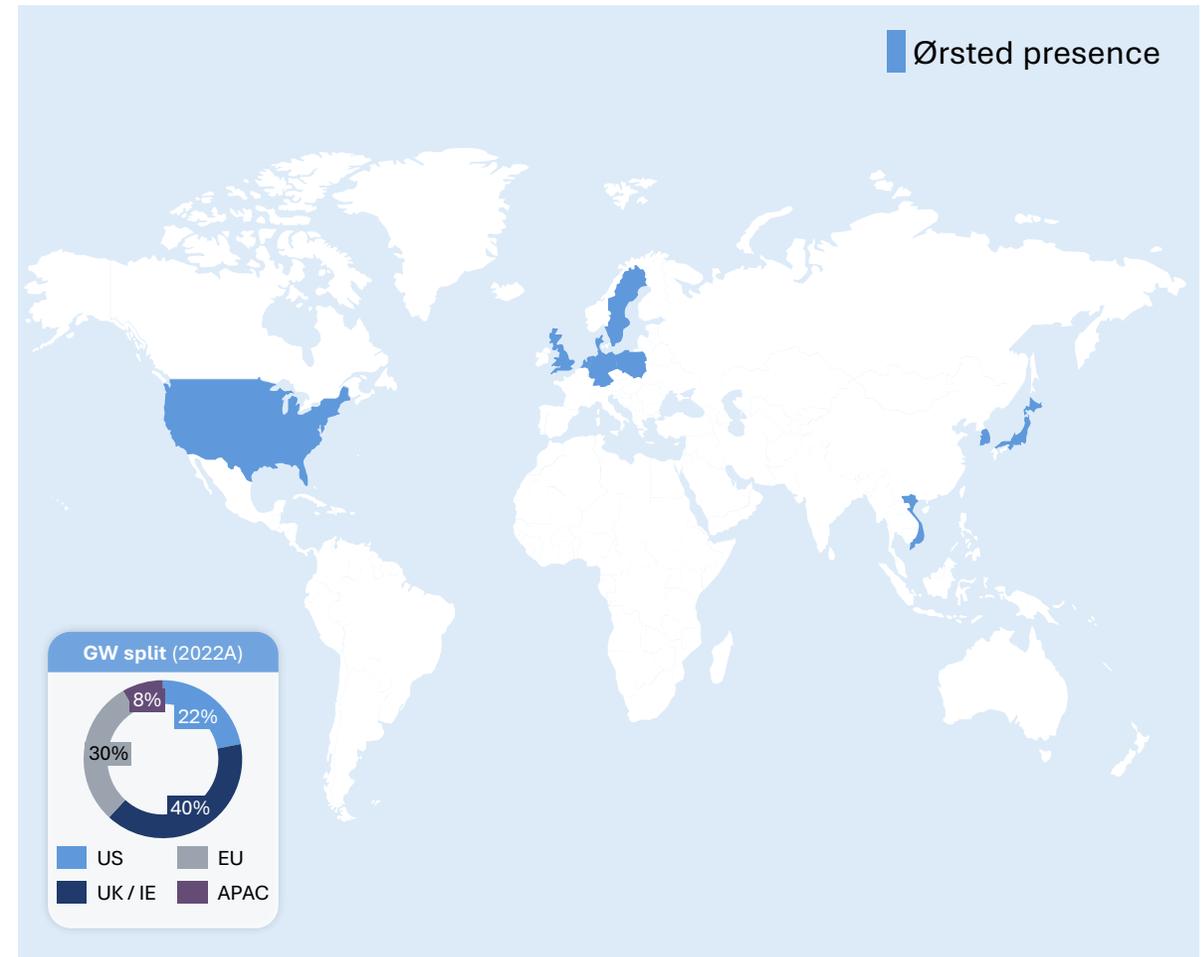
17.6%

Global OW market share by 2030 with 30 out of 170 GW in Ørsted's portfolio...

...while ensuring net-positive biodiversity impact from new energy assets

## Ørsted is mostly present in western nations and parts of East Asia

Ørsted presence



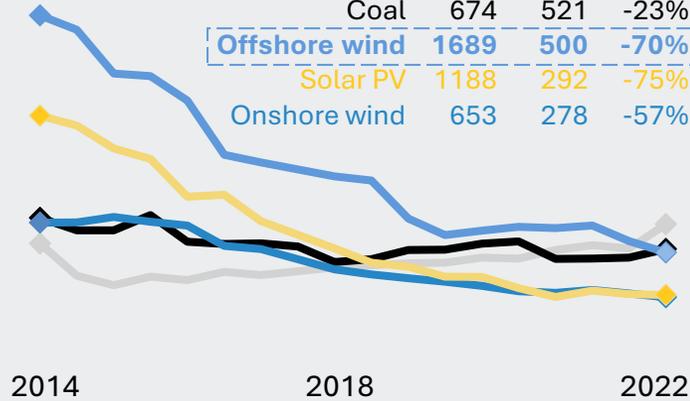
# Offshore wind is becoming increasingly competitive and advanced

## Core market

### Fixed bottom offshore at competitive LCOEs

LCOE: DKK/MWh (real 2021)

	2014	2022	Δ
Gas	542	646	+19%
Coal	674	521	-23%
<b>Offshore wind</b>	<b>1689</b>	<b>500</b>	<b>-70%</b>
Solar PV	1188	292	-75%
Onshore wind	653	278	-57%



Offshore wind has achieved 70% reduction in LCOEs

**Offshore wind has become more competitive than gas and coal**, which has resulting in increased competition from oil majors:



## East Asia opportunities

### Taiwan and Japan as key new markets



#### Taiwan

Wind speeds **>11 m/s<sup>1</sup>**  
 NCF<sup>2</sup> expected **>50%**  
 Target by 2040 of **40 GW**

**Potential corporate PPA providers:**



#### Japan

Wind speeds **>10 m/s<sup>1</sup>**  
 NCF<sup>2</sup> expected **>50%**  
 Target by 2040 of **45 GW**

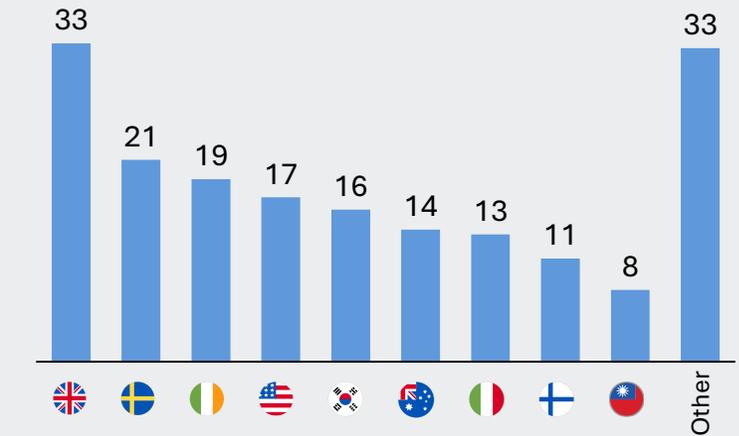
**Potential corporate PPA providers:**



## New technologies

### Floating technology as a key player

Floating Offshore Wind Total Portfolio (GW)



Global floating offshore wind **pipeline of 185 GW**

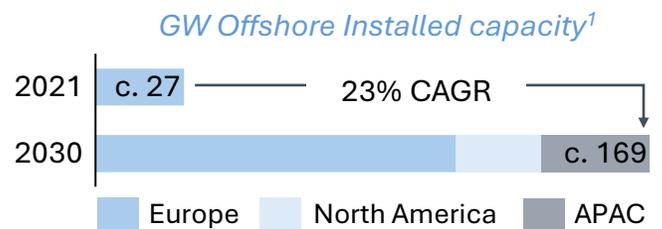
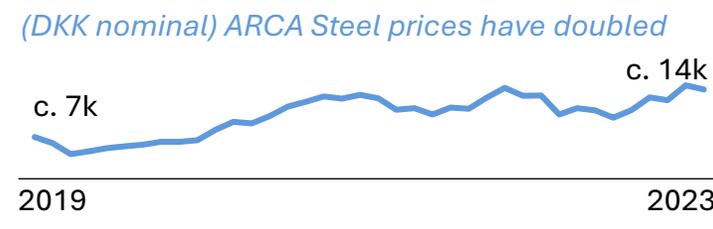
Floating **market share of 16%** by 2050

Floating offshore wind **enables new seabed targets** previously unviable

Source: IEA, Stiesdal, Ørsted, Notes: 1) Measured at 200m height at selected targeted areas from 4C Offshore, 2) Net Capacity Factor

# Ørsted needs to overcome inherent offshore wind industry challenges

Different markets have slightly different risk profiles related to the maturity of the offshore industry

Topic	Increasing competition	Regulatory interventions	Pressure on supply chains																		
<p><b>Risk</b></p>	<p>Rapid market growth and attractiveness drives increased competition</p> <ul style="list-style-type: none"> <li>Increase in <b>prices</b> of bids</li> <li>Pressure to <b>localize</b> content</li> <li>System <b>integration</b></li> <li><b>Ecological</b> mitigation</li> </ul> <p><i>GW Offshore Installed capacity<sup>1</sup></i></p> 	<p>Spikes in energy prices has resulted in introductions of <b>regulatory price caps</b></p> <p><b>Slow process</b> from first planning to <b>operation</b></p> <p><b>Consession interventions</b></p> 	<p>Increase in <b>CAPEX</b></p> <p><b>Bottlenecks</b> in supply chain</p> <p>Increasing demand for <b>sustainable materials</b></p> <p><i>(DKK nominal) ARCA Steel prices have doubled</i></p> 																		
<p><b>Rating</b></p>	<table border="1"> <tr><td>Europe</td><td>High</td></tr> <tr><td>NA</td><td>High</td></tr> <tr><td>E. Asia</td><td>Low-Medium</td></tr> </table>	Europe	High	NA	High	E. Asia	Low-Medium	<table border="1"> <tr><td>Europe</td><td>High</td></tr> <tr><td>NA</td><td>Medium</td></tr> <tr><td>E. Asia</td><td>Medium</td></tr> </table>	Europe	High	NA	Medium	E. Asia	Medium	<table border="1"> <tr><td>Europe</td><td>Medium</td></tr> <tr><td>NA</td><td>High</td></tr> <tr><td>E. Asia</td><td>High</td></tr> </table>	Europe	Medium	NA	High	E. Asia	High
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<p><b>Mitigation</b></p>	 <p>Portfolio <b>scale</b> edge on competitors, <b>know-how advantages</b></p>  <p>Explore <b>new markets</b>, Leverage points of <b>differentiation</b></p>	 <p><b>Continuous dialogue</b> with governments in the active markets</p>	 <p><b>Hedging</b> commodities to reduce unexpected CAPEX increases</p>  <p>In advance <b>volume agreements</b> with suppliers</p>																		

Source: Case material, Ørsted Annual report 2022, NYSE  
 Note: 1) Excluding Mainland China

# BLUEPRINT '30

## Agenda

### Executive summary

p. 2



### Insights

p. 4-7



### BLUEPRINT '30

p. 9-13



### Impact

p. 15-18



### Conclusion

p. 20



# BLUEPRINT '30 strategy will secure a future for Ørsted Offshore Wind

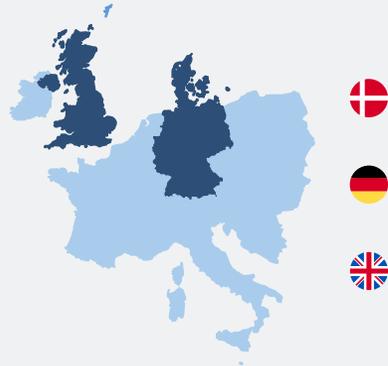
A two-fold approach to secure a valuable pipeline through the Core Strategy and Growth Strategy

A Core Strategy to leverage Ørsted's strong position in core markets

A Growth Strategy to secure future pipeline in new markets

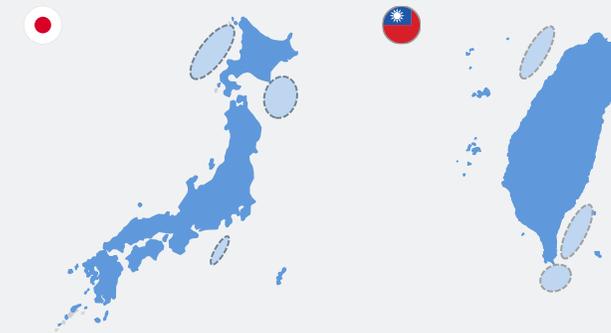
## Core technologies in core markets with high competition

Denmark, Germany and the United Kingdom



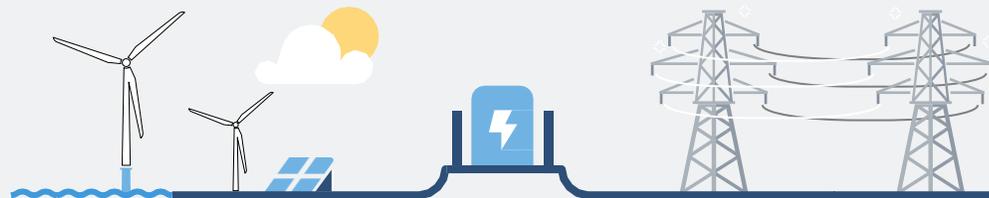
## Core and advanced technologies in new markets

Japan and Taiwan, including floating



## Differentiated bidding through system integration

Battery system integration



...and standard initiatives

## Differentiated bidding through local content

Local procurement of foundation, cables and contractors



...and standard initiatives

# The Core Strategy will utilize core technologies in core markets

Ørsted has extensive experience in DK, DE and the UK



**Denmark:** 5.1 GW fixed bottom to be auctioned

**Germany:** 25.8 GW fixed bottom to be auctioned

**UK:** 8.0 GW fixed bottom to be auctioned



Ørsted has a proven project delivery model in core markets

Strong regulatory support

Ørsted has deep understanding of the energy systems

Ørsted to utilize the core competency of the firm to deliver significant amount of offshore wind capacity in core markets

The leading offshore wind supply chain is found in Europe

Home continent to major WTG suppliers



HQ: Århus, DK

HQ: Hamburg, DE



Most advanced offshore wind supply chain worldwide

Ørsted to leverage strong partnerships with WTG suppliers

High competition from majors



Large energy majors are increasingly allocating capital towards renewables

Competitors' capabilities and credentials are mostly in Europe

Ørsted to differentiate offering by utilising cross-technology capabilities



# The Core Strategy will win bids by offering valuable system integration

## Differentiated bidding through system integration

## Ørsted will win bids by including battery system integration in order to improve the energy systems through grid stability and mitigation of constraints on transmission lines

The differentiated DK, DE, NL bidding strategy will emphasize **system integration**<sup>1</sup>

Auction parameter	DK	DE	UK	Value add
Price	●	●	●	◐
Local content	●	●	●	○
<b>System integration</b>	●	●	●	●
Ecological mitigation	●	●	●	◐
Sustainability	●	●	●	◐

 DK and UK energy systems have extremely high renewable capacity  
 →  
 The energy systems are vulnerable to grid instability



**Battery system integration solution:**

Batteries will provide grid stability through inertia and reactive power, thereby improving the energy systems

 DE and UK energy systems are affected by constraints on transmission lines  
 →  
 Energy is lost due to distance between supply and demand



**Battery system integration solution:**

Batteries will consume energy during grid constraints, and then transfer the energy later when the transmission lines are no longer constrained

**Ørsted's differentiated contribution:**

Significantly improving the energy systems by including needed system integration solutions in the bid

Notes: 1) The bids will also commit to a standard ecological initiative in case of being awarded the project;

# The Growth Strategy will focus on new markets with low competition

## Ørsted to advance offshore wind in East Asia while only facing limited competition



### Japan – 8.9 GW to be auctioned

- 5.5 GW fixed bottom, 3.4 GW optional

### Taiwan – 6.0 GW to be auctioned

- 3.0 GW fixed bottom, 3.0 GW optional



1.

Synergies with Ørsted existing development portfolio (Japan, South Korea, Taiwan)

2.

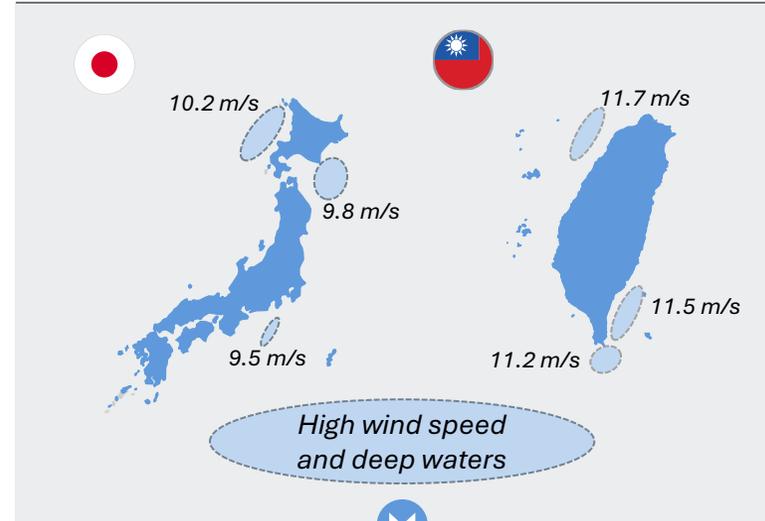
Low competition and strong regulatory support

3.

Ørsted has experience in creating and advancing offshore wind industry

Becoming the industry leader in East Asia presents a growth opportunity post 2030

## Ørsted will advance floating offshore capabilities to enable better wind resource



### Japan

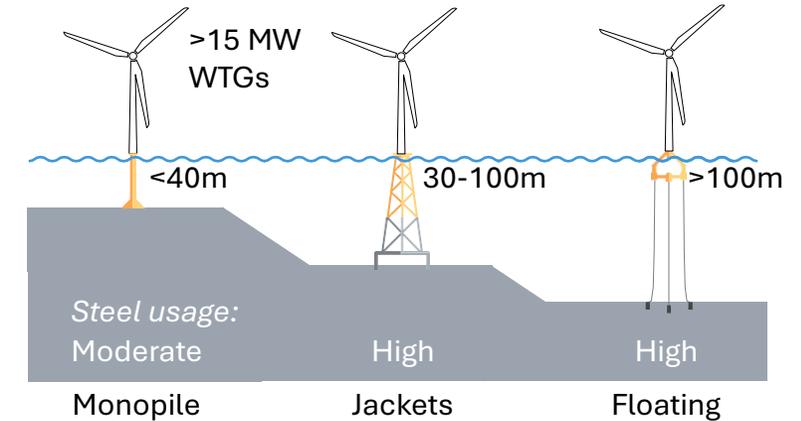
Clear corporate offtake demand with supportive government, however immature offshore wind market

### Taiwan

One of the best offshore wind resources in the world, however challenged geopolitical situation

East Asian offshore wind opportunity seized with a combination of fixed and floating

## Ørsted will mitigate supply chain challenges through strategic procurement



### WTGs

Strategic procurement through global Ørsted competencies of >15 MW WTGs from:



### Foundations and cables

Local procurement to ensure local benefits Ørsted to invest in local production facilities (see next slide)

Supply chain issues to be mitigated through strong partnerships and local suppliers



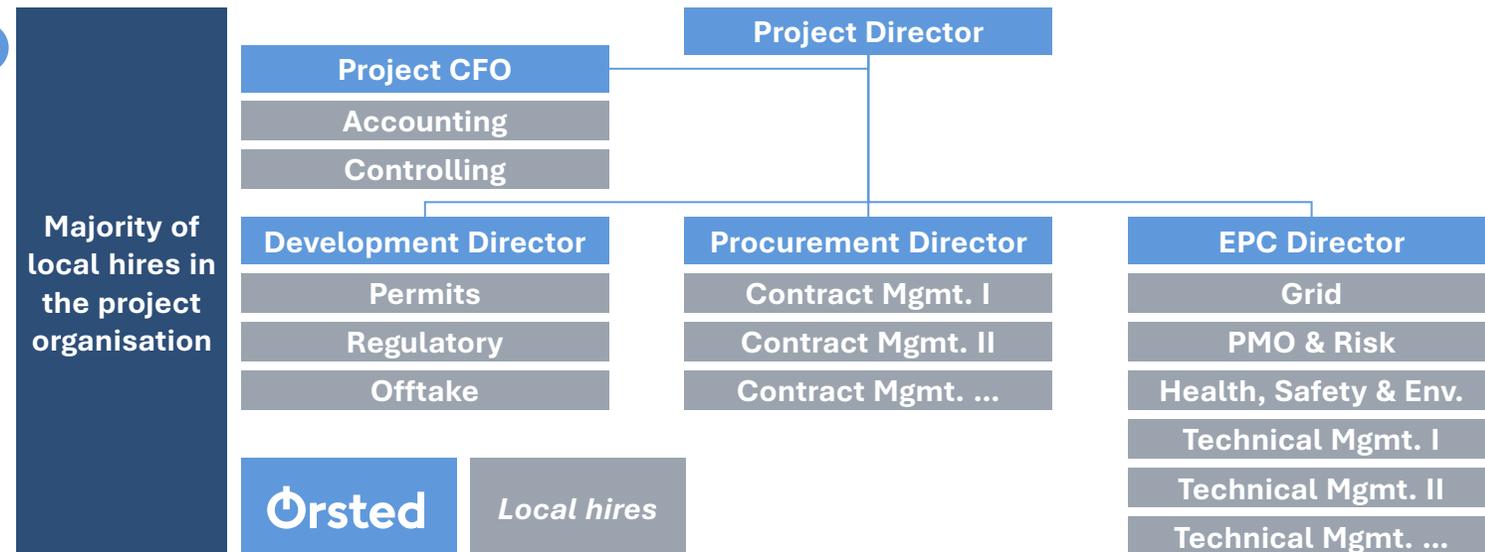
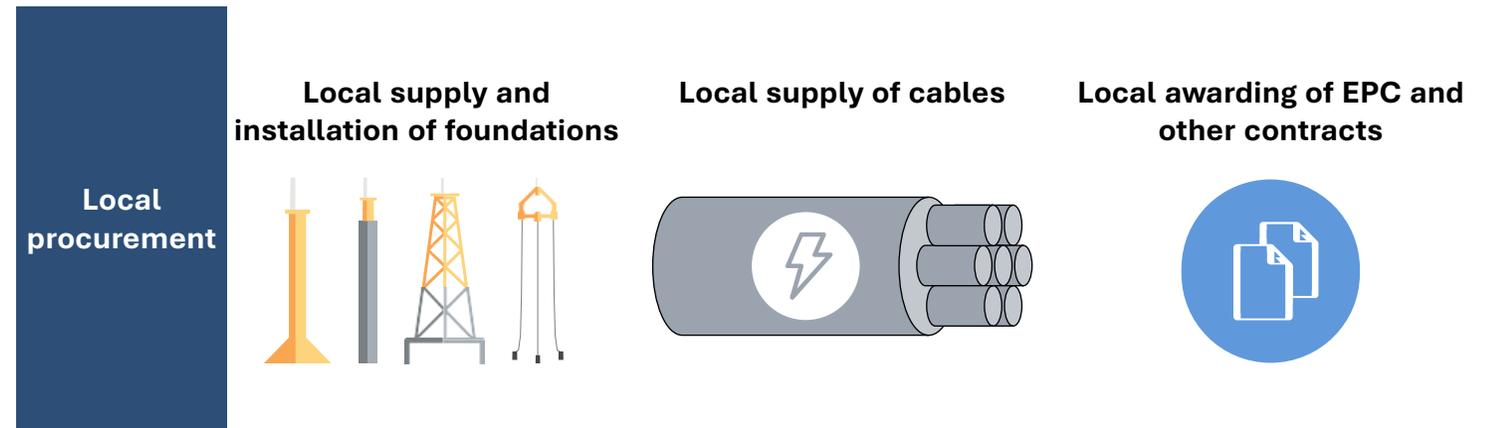
# The Growth bids will be won by providing significant local investments

## Differentiated bidding through local content

The differentiated East Asia bidding strategy will emphasize **local content**<sup>1</sup>

Auction parameter	Japan	Taiwan	Value add
Price	●	●	📊
<b>Local content</b>	●	●	📊
System integration	●	●	📊
Ecological mitigation	●	●	📊
Sustainability	●	●	📊

## Ørsted can greatly benefit societies from local procurement and advancing local technical capabilities



### Ørsted's differentiated contribution:

1. Significant upskilling of local hires and procurement of key deliverables from local companies
2. Shaping a financially healthy and environmentally sustainable offshore wind industry in East Asia region

Notes: 1) The bids will also commit to a standard ecological initiative and a standard local content initiative in case of being awarded the project;

# BLUEPRINT '30

## Agenda

### Executive summary p. 2



### Insights p. 4-7



### BLUEPRINT '30 p. 9-13



### Impact p. 15-18



### Conclusion p. 20



# BLUEPRINT '30 enables high impact in both core and new markets

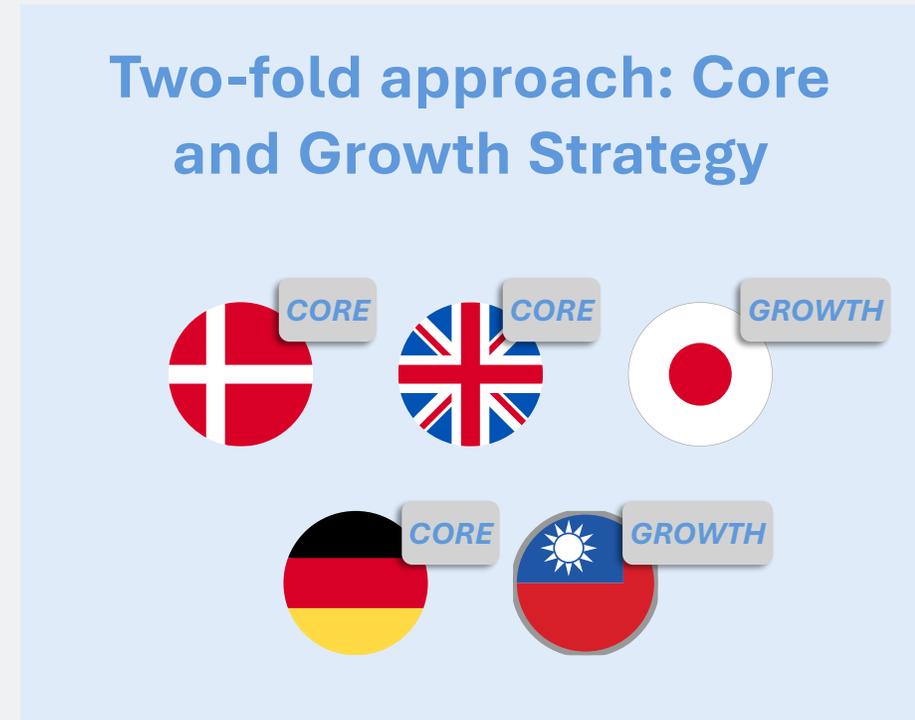
And secures financial and environmental health

**8 GW** Additional capacity constructed and installed by 2030, in accordance with the ambitions of Ørsted

**14.9%** Total Implied win rate, with variation within each market cluster

**170.9bn** DKK Combined DEVEX and CAPEX, including Sustainability and biodiversity initiatives, tech innovation and Local content differentiation points

**7 – 9%** Unlevered lifetime IRR, taking WACC spread into consideration to ensure financial health



# Ørsted will realize the strategy through comprehensive bid structure

## BLUEPRINT '30 Bidding overview

Core markets East Asia

					
#Auctions	17	4	2	6	2
Avg. GW	1.5	1.3	4.0	1.5	3.0
Bid intended	✓	✓	✓	✓	✓
Auction Year	2023 – 2026	2023 – 2024	2023 – 2024	2023 – 2026	2023 – 2024
Turbine type	Fixed	Fixed	Fixed	Fixed and optional	Fixed and optional
Auction type	Central	Central	Central	Central	Central
Bid participation	← 38.9 GW →			← 14.9 GW →	
Regional targets	← 5.0 GW →			← 3.0 GW →	
Implied win rate from bidding	← 12.9 % →			← 20.1 % →	
Odds factor <sup>1</sup>	← 7.8 →			← 5.0 →	

## Total numbers

#31

Auction bids

53.8 GW

Bid participation

14.9

Implied win rate from bidding (%)

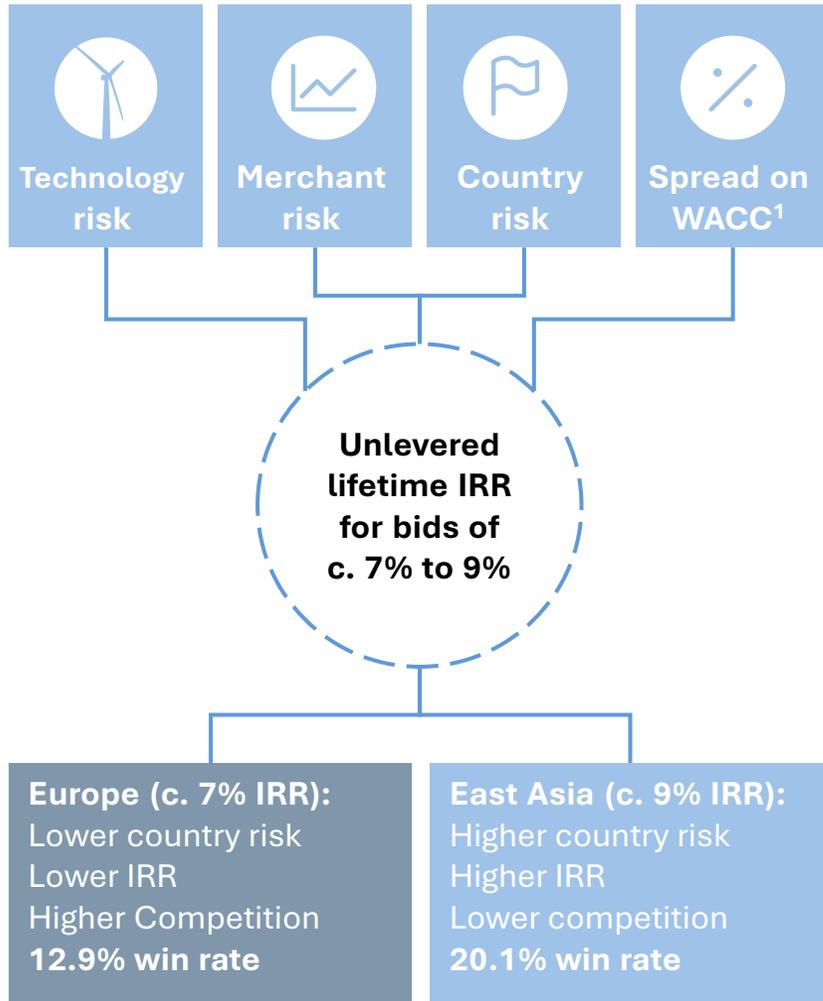


Notes: (1) Estimated # of bids submitted to win one auction  
Sources: Case material, Team Renewables self-made assumptions

# Underlying assumptions and key characteristics

The implementation of BLUEPRINT '30 complies with outlined capital constraints while delivering satisfying returns

## Bidding strategy on win



## Yearly capital allocation (DKKm)

Timeline	2023	2024	2025	2026	...	2030
<b>SUM DEVEX &amp; CAPEX</b>						
<b>Europe</b>	◆		103,804	◆		
<b>Asia</b>	◆		67,087	◆		
<b>DECOMPOSED</b>						
<b>DEVEX</b>						
<b>Europe</b>	953	690	863	413	...	...
<b>Asia</b>	488	719	406	250	...	...
<b>CAPEX</b>						
<b>Europe</b>	◆		100,000	◆		
<b>Asia<sup>2</sup></b>	◆		64,500	◆		
<b>Tech. innovation diff. initiative</b>						
<b>Europe</b>	◆		591	◆		
<b>Asia</b>	◆		322	◆		
<b>Local content diff. initiative</b>						
<b>Europe</b>	◆		0	◆		
<b>Asia</b>	◆		242	◆		
<b>Sustainability / biodiversity diff. initiative</b>						
<b>Europe</b>	◆		296	◆		
<b>Asia</b>	◆		161	◆		

Notes: 1) Assumed at 150 to 300bps 2) Construction turbine type Floating constitute 0.9 GW corresponding to 4.5 DKKbn in Asia segment

# BLUEPRINT 30 strategy to follow principles for sustainability

## Principles for sustainability as integrated part of the business



### Key focus areas

- A Science-aligned climate action**
- B Green energy in balance w. nature**
- C Green transformation for people**
- D Enabling sustainable governance**

## Principles for an environmentally sustainable industry

- I. Minimizing cement usage in turbine foundations
- II. Sourcing sustainable steel
- III. Commitment to recycle wind turbine blades
- IV. Ensuring biodiversity stays unharmed
- V. Increase marine life near offshore parks

## Sustainable offshore wind industry worldwide



# BLUEPRINT '30

## Agenda

### Executive summary p. 2



### Insights p. 4-7



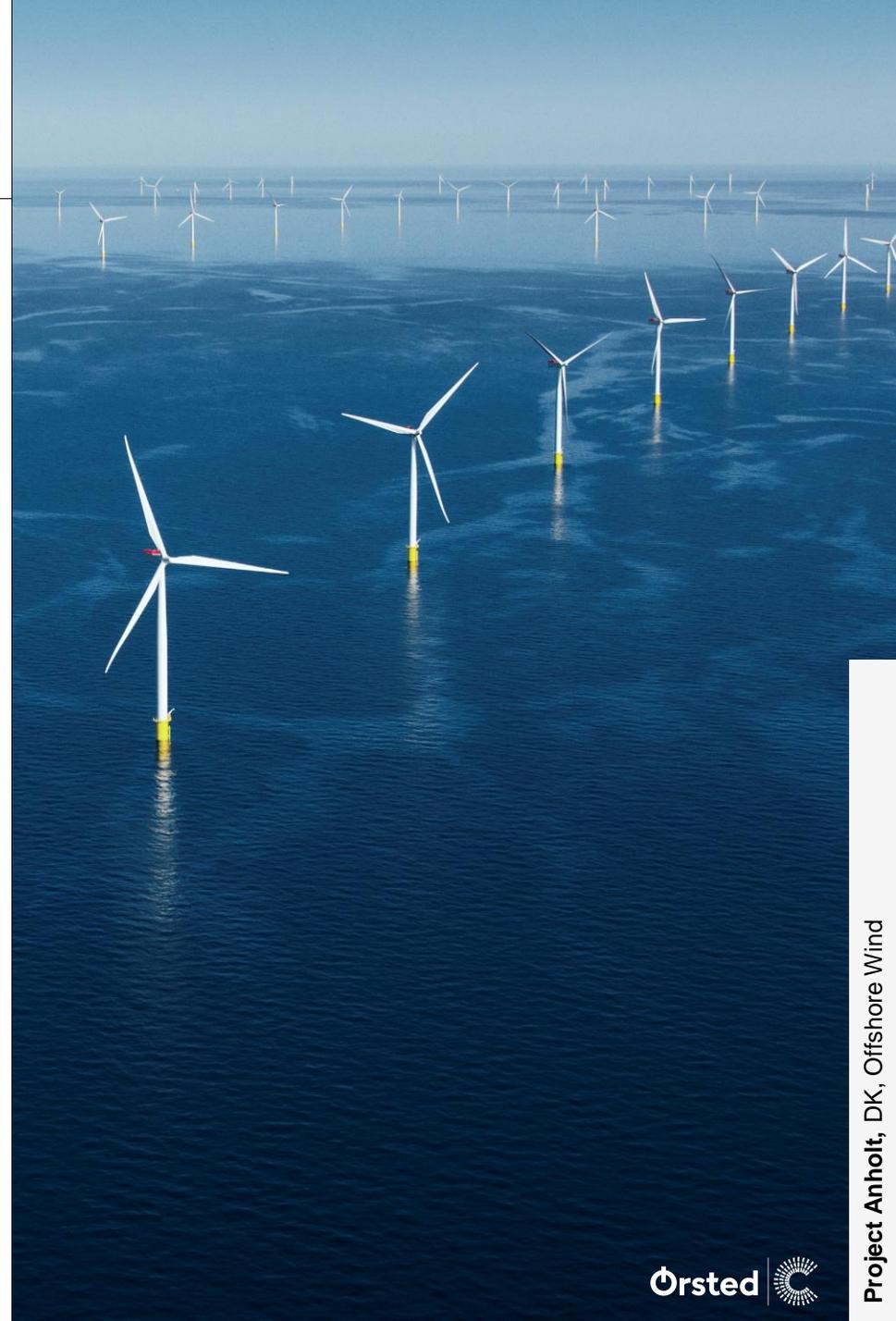
### BLUEPRINT '30 p. 9-13



### Impact p. 15-18



### Conclusion p. 20



# Concluding on the BLUEPRINT '30 objective

## Reaching 30 GW on offshore wind capacity

### Asks from Ørsted

How should Ørsted prioritise its efforts to best reach its 2030 target of 30 GW offshore wind capacity, while helping to ensure a healthy financial business and industry?



### BLUEPRINT '30 strategy

#### Focus on two areas (Growth in East Asia and Core Markets in Europe)

- Core Strategy: Utilise Ørsted's #1 offshore wind position to capture significant growth in established markets
- Growth Strategy: Expand to new markets with both floating and fixed bottom technologies to target deep water sea beds with high wind speeds

How should Ørsted prioritise auctions over the next four years (2023-2026) to win 8 GW offshore wind capacity, considering the capital constraint of DKK 200 bn?



- Core Markets: Actively bid on 38.9 GW offshore wind tenders
- East Asia: Actively bid on 14.9 GW offshore wind tenders
- Additionally: Invest in sustainable initiatives to increase win rate

How can Ørsted differentiate its offering from competitors?



- Core Strategy differentiation: Add battery system integration into the offering to improve the nation's energy systems
- Growth Strategy differentiation: Significant emphasis on procuring key components locally (e.g. foundations, wire, EPC and other contracts) and local hiring most project roles (non-director roles)

As a market leader, how can Ørsted help improve the general health of the offshore wind sector to enable long-term industry sustainability, both financially and environmentally?



- Ørsted can utilize cross-technological capabilities to advance energy systems
- Ørsted can be a first-mover in markets to significantly advance early-stage offshore industries and increase renewable deployment worldwide
- Ørsted to apply principles for sustainability and shape industry standard



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Team  
**Renewables**

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